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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,435	11/20/2003	Arutiun Papken Ehiasarian	2146/41506/Case 1	9841

279 7590 08/18/2005

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 08/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/718,435

Applicant(s)

EHIASARIAN ET AL.

Examiner

Rodney G. McDonald

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12-11-03</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Specifically,

The strength of the horizontal component provided in claim 1 is missing in the specification.

The range provided in claim 2 is missing in the specification.

The ranges provided in claim 3 of the pulse duration and pulse intervals are not provided in the specification.

The distribution of the magnetron discharge of claims 5 and 6 is missing in the specification

The average pulsed discharge current density of claim 7 being less than 10 A cm^{-2} is missing in the specification.

The average pulsed discharge current density of claim 8 being less than 100 A cm^{-2} is missing in the specification.

The range of the pulses generated having a peak voltage from 0.5 to 2.5 kV of claim 9 is missing in the specification.

The cathode pre-treatment cathode sputtering be carried out in a non-reactive atmosphere and the materials of the targets of claim 10 are missing from the specification.

The pressures ranges provided in claims 11 and 12 of the pressure ranges is not provided in the specification.

The pulse width range and pulse interval range of claim 14 is missing from the specification.

The coatings of claim 15 is missing from the specification.

The rare earth elements of claims 16, 18 and 19 are missing from the specification.

The coating multilayers of claim 17 is missing from the specification.

The adjustment of the distance of the magnetic array of claim 22 is missing from the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 4, "the magnetron cathode" lacks antecedent basis.

Claim 1, line 4, "type" is unclear.

Claim 3, line 1, "the pulse duration" lacks antecedent basis.

Claim 2, line 2, "the pulse interval" lacks antecedent basis.

Claim 5, line 2, "type" is unclear.

Claim 5, lines 2 and 3, "the cathode surface area" lacks antecedent basis.

Art Unit: 1753

Claim 6, line 2, "the cathode surface area" lacks antecedent basis.

Claim 7, lines 2 and 3, "the averaged pulsed current density" lacks antecedent basis.

Claim 8, lines 1 and 2, "the localized maximum pulsed discharge current density" lacks antecedent basis.

Claim 9, line 1, "the pulses" lack antecedent basis.

Claim 10, line 2, "magnetic field-assisted cathode sputtering" lacks antecedent basis.

Claim 10, line 3, "e.g. in Ne, Ar, Kr or Xe" is unclear because it is unclear if this is meant to be part of the claim.

Claim 16 is indefinite because it depends on claim 15 which require that the coating "consists" of nitrides or carbonitrides. It is unclear how the coating can contain the rare earth elements.

Claim 17, line 2, "fine" lacks basis for comparison.

Claim 17, line 2, "(nanometer-scale)" is unclear.

Claim 18 is unclear because it should depend from claim 17. Also the claim language of claims 16 or 17 requiring consisting language would exclude the rare earths.

Claim 19 is unclear because it should depend from claim 17. Also the claim language of claims 16 or 17 requiring consisting language would exclude the rare earths.

Claim 20, line 2, "type" is unclear.

Claim 22, line 3, "the magnet array" lacks antecedent basis.

Claim 22, line 3, "the target surface" lacks antecedent basis.

Allowable Subject Matter

Claims 1-22 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 1-22 are allowable over the prior art of record because the prior art of record does not teach the claimed subject matter including wherein the substrate is pre-treated in the vapour of a pulsed, magnetic field-assisted cathode sputtering operation, and during pre-treatment a magnetic field arrangement of a magnetron cathode with a strength of the horizontal component in front of the target of 100 to 1500 Gauss is used for magnetic field-assistance with the power density of the pulsed discharge during pre-treatment being greater than 1000 W cm^{-2} and wherein after pre-treatment further coating is effected by means of cathode sputtering.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
August 15, 2005